

ABSTRACT

1 The present invention facilitates cluster formation within a communications network by
2 utilizing network topology information to designate network nodes that are crucial for relaying
3 traffic as cluster head nodes, while remaining network nodes are designated as member nodes.
4 A beacon packet transmission rate of a network node or the interval between successive beacon
5 packet transmissions by that node is adjusted by the present invention to facilitate cluster
6 formation independent of network size and varying initial start times of network nodes. In
7 addition, the present invention utilizes the above described cluster formation technique to form
8 a three tier architecture for transmission or flooding of routing information from head node
9 databases throughout the network. The cluster formation technique is applied to cluster head
10 nodes to form an additional network tier of super nodes that distribute routing information, while
11 cluster head nodes route network data traffic. The databases of cluster head nodes are examined
12 subsequent to flooding of head node database information by super nodes, where data missing
13 from a head node database is requested from a corresponding super node, thereby eliminating
14 transmissions of acknowledgment messages.